



## Product overview

# E-ENERGY CARBON

Status April 2020



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## Products

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## Terms

- Delivery ex works
- Payment with order unless credit agreed
- Price list without VAT
- The general terms and conditions apply



# **E-ENERGY – THE NEW SURFACE HEATING SYSTEM**

ELECTRIC HEATING: COMFORTABLE. INEXPENSIVE. SIMPLE.

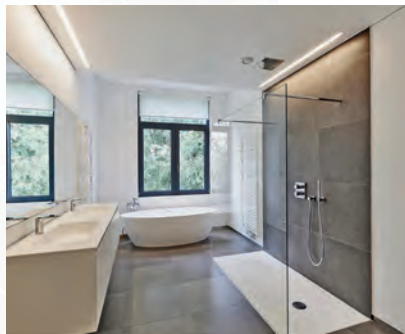






**FULL HEATING** Heating at the touch of a button with **E-ENERGY CARBON** –the fully-fledged heating system. Costs of classic heating systems (boiler, gas connection, distributor, etc.) are eliminated. **E-ENERGY** makes heating with electricity a sensible alternative – ecologically and economically!

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### COMFORT HEATING

Enjoy the warmth of well-being at specific points and room by room. Temperature control of surfaces with healthy, invisible radiant heat, even in wet areas.

**E-ENERGY CARBON** makes it possible.

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### MOISTURE

**PROTECTION** The surface temperature is permanently maintained above the dew point with **E-ENERGY CARBON FLEECE S**. This prevents the formation of condensation on the surface. Moisture, the cause of mould growth, is thus prevented in the long term.

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## » NEW POSSIBILITIES FOR YOUR ROOMS

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*Take the opportunity to design completely different room concepts – without taking radiators and convectors into consideration.*

***Design your own living space.***

*Our heating foils create space without wasting space. Even in confined spaces, space can be created by replacing old radiators with **E-ENERGY CARBON**.*

*This is not only a visual improvement, but also increases comfort – in new buildings and renovations.*



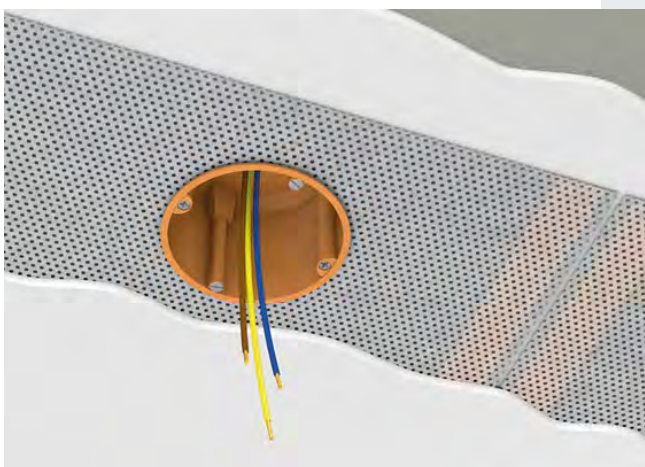
## » ADVANTAGES AT A GLANCE



**CEILING** In the ceiling, the material ensures an excellent, even distribution of heat radiation.

After filling, the material can be painted or wallpapered.

The subsequent insertion of can openings for lighting etc. is possible without any problems.

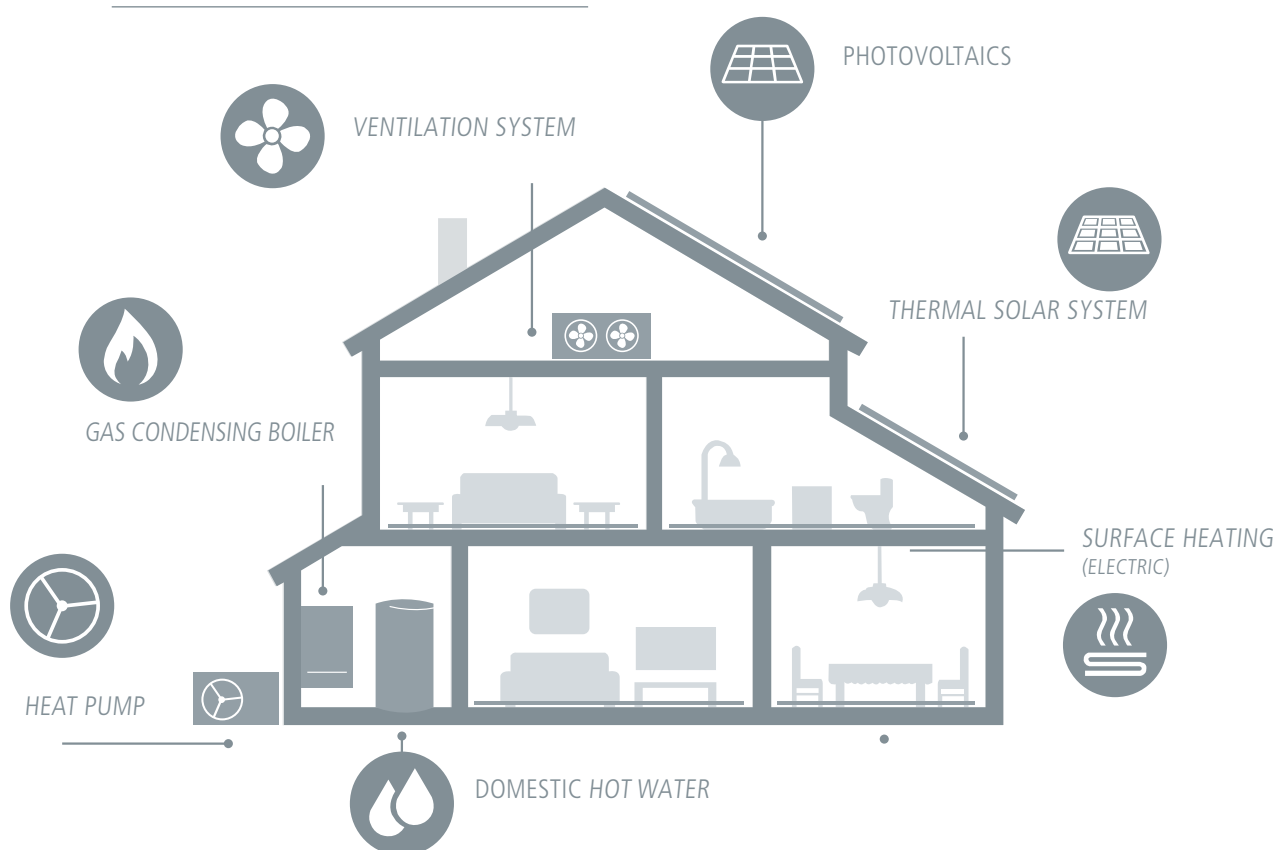


- ✓ Low energy, offering significant fuel savings over conventional electric heating
- ✓ Reduced carbon emissions
- ✓ Skimmed under the final plaster coat
- ✓ Invisible as it's hidden in the ceiling
- ✓ Low investment costs and easy installation
- ✓ Effective protection against damp spots and mould growth
- ✓ Resistent to damage
- ✓ Safe, low voltage
- ✓ Fast warm up
- ✓ Controllable via apps
- ✓ 10 year warranty

## » ECONOMIC EFFICIENCY | SINGLE-FAMILY HOUSE 170 m<sup>2</sup> (KfW EFFICIENCY HOUSE 40)

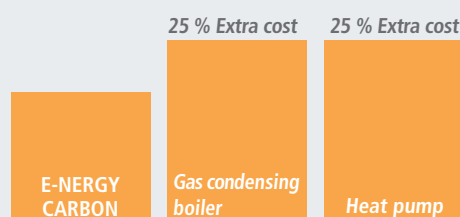
With the **E-ENERGY CARBON** system, houses can be heated efficiently and cost-effectively. In addition, the simple, uncomplicated technology reduces investment costs and gives the user full control over their heating. The residents decide where and when to heat as necessary.

### OVERVIEW SYSTEM TECHNOLOGY



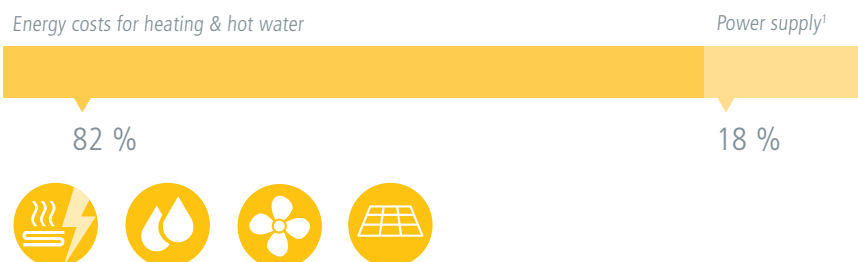
## » COMPARISON OF INVESTMENTS

Overall system configuration in accordance with guideline for KfW Effizienzhaus 40 (see comparison of operating costs)

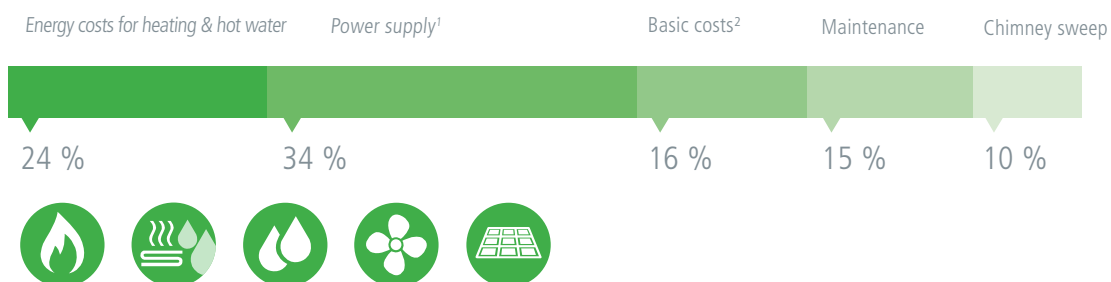


## » COMPARISON OF OPERATING COSTS

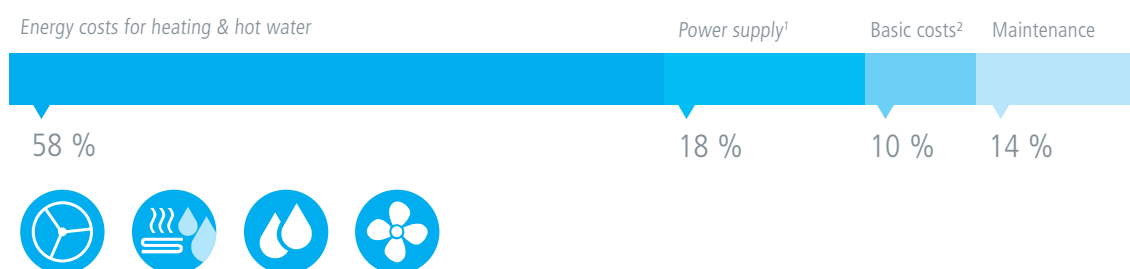
### **ELECTRIC SURFACE HEATING £552 / YEAR\***



### **GAS CONDENSING BOILER £689 / YEAR\*\***



### **AIR-TO-WATER HEAT PUMP £727 / YEAR\*\***



#### **Basis of calculation**

\* Electricity costs 0.261 €/kWh

\*\* Gas costs 0.057 €/kWh

\*\*\* Electricity costs 0.20 €/kWh (separate electricity meter)

<sup>1</sup> Ventilation & circulation lines, pumps (heating, circulation)

<sup>2</sup> Electricity meter (electric surface heating) / Gas connection (gas condensing boiler)



## » E-ENERGY CARBON

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The **E-ENERGY CARBON** system is a unique electric fleece heating system for new buildings and renovation of existing buildings.

Our system works with a protective low voltage of 36V and is comfortably controlled by most modern Smart enabled room thermostats including the **E-ENERGY room thermostat** with modern Smart Home technology.

Connection is completely safe thanks to the **E-ENERGY CARBON transformer** with safety extra-low voltage (SELV).



36 V Safety extra-low voltage (SELV)



Patented production process



Subsequent drilling of holes possible



Perforation for secure adhesion (CARBON FLEECE)



0.4 mm thick



Flexible installation in ceilings

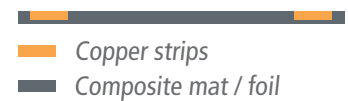


Homogeneous structure

## » HOMOGENEOUS STRUCTURE

A diffusion-open, fleece-backed and adhesion-optimized film, which, due to its perforation, is ideal for plaster systems for ceiling installations.

Our patented manufacturing method: **E-ENERGY CARBON FLEECE** is homogeneously fused and not built up in individual layers. This prevents defects caused by detachment of individual layers.



## » CONNECTION

- 1 E-Nergy Carbon Foil
- 2 Sensor
- 3 Thermostat
- 4 Transformer

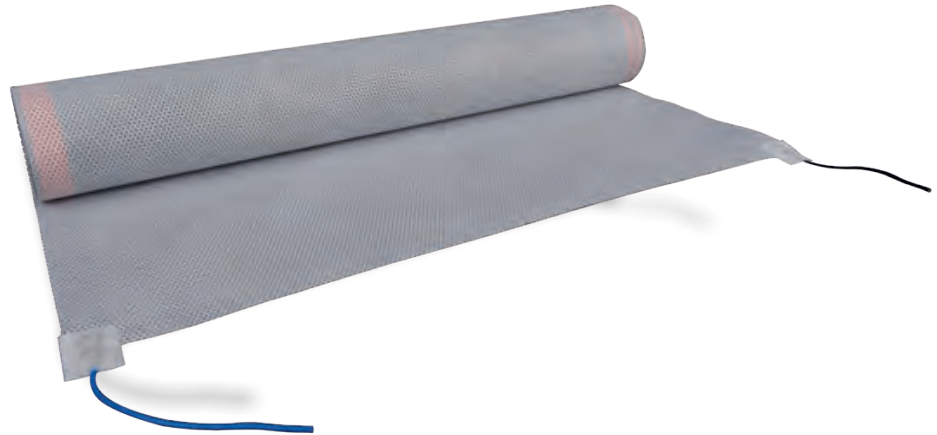


Diagram shows wall installation for ease of explanation - in fact the product is installed into the ceilings

# E-ENERGY CARBON

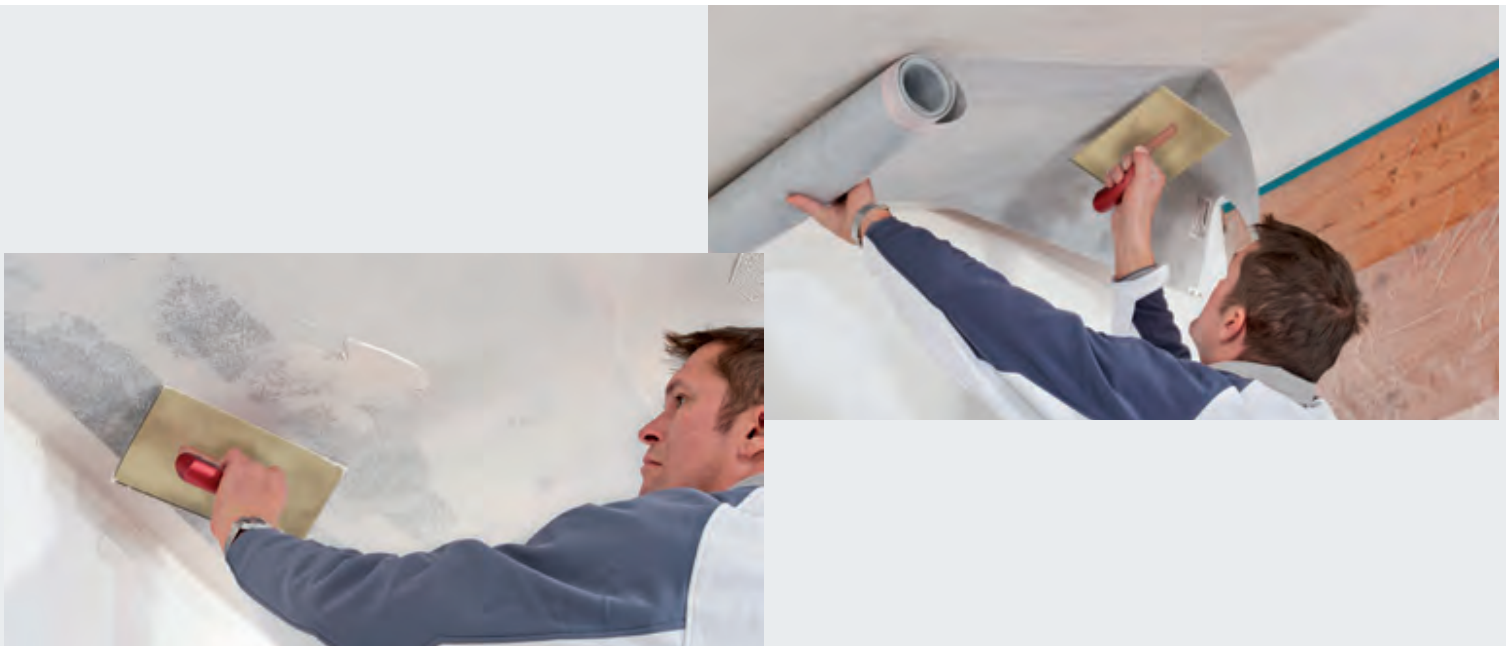
**E-ENERGY CARBON** works throughout the building. A healthy room climate creates comfortable warmth from the ceiling which radiates to walls, surfaces and floors. The energy-efficient and sustainable **E-ENERGY CARBON** panel heating systems enable low investment and operating costs. Homeowners save costs and protect the environment with renewable energies via photovoltaics.

**1** Low installation height with 0.4 mm thick heating foils



**2** Perforation for secure adhesion & flexible installation in the ceiling,

**3** Safe connection thanks to the E-ENERGY CARBON transformer with 36 V safety extra-low voltage (SELV)





## E-ENERGY CARBON FLEECE



Flexible  
installation in ceilings



Adhesion-optimised  
through perforation



High heat conduction  
and rapid heat-up





Fleece covered



600 mm Width



## E-ENERGY CARBON FLEECE

### Heating foils

Diffusion-open, fleece-laminated and adhesion-optimised foil, which is ideal for plaster systems and fillers for ceiling, wall and floor installations due to its perforation (fixed installation).

**36 W/lfm (60 W/m<sup>2</sup>)**



Article	Dimension (LxWxH)	Item-no.	PU	Price/Item
Heating foil 36 V – 36 W/m (60 W/m <sup>2</sup> ), 1 m	1,000 x 600 x 0.4 mm	2 02 612	1 pc.	£60.00
Heating foil 36 V – 36 W/m (60 W/m <sup>2</sup> ), 1.5 m	1,500 x 600 x 0.4 mm	2 02 613	1 pc.	£90.00
Heating foil 36 V – 36 W/m (60 W/m <sup>2</sup> ), 2 m	2,000 x 600 x 0.4 mm	2 02 600	1 pc.	£120.00
Heating foil 36 V – 36 W/m (60 W/m <sup>2</sup> ), 2.5 m	2,500 x 600 x 0.4 mm	2 02 601	1 pc.	£150.00
Heating foil 36 V – 36 W/m (60 W/m <sup>2</sup> ), 3 m	3,000 x 600 x 0.4 mm	2 02 602	1 pc.	£180.00
Heating foil 36 V – 36 W/m (60 W/m <sup>2</sup> ), 3.5 m	3,500 x 600 x 0.4 mm	2 02 610	1 pc.	£210.00
Heating foil 36 V – 36 W/m (60 W/m <sup>2</sup> ), 4 m	4,000 x 600 x 0.4 mm	2 02 603	1 pc.	£240.00
Heating foil 36 V – 36 W/m (60 W/m <sup>2</sup> ), 5 m	5,000 x 600 x 0.4 mm	2 02 611	1 pc.	£300.00
Heating foil 36 V – 36 W/m (60 W/m <sup>2</sup> ), 6 m	6,000 x 600 x 0.4 mm	2 02 604	1 pc.	£360.00
Heating foil 36 V – 36 W/m (60 W/m <sup>2</sup> ), 7 m	7,000 x 600 x 0.4 mm	2 02 605	1 pc.	£420.00
Heating foil 36 V – 36 W/m (60 W/m <sup>2</sup> ), 8 m	8,000 x 600 x 0.4 mm	2 02 606	1 pc.	£480.00
Heating foil 36 V – 36 W/m (60 W/m <sup>2</sup> ), 9 m	9,000 x 600 x 0.4 mm	2 02 607	1 pc.	£540.00
Heating foil 36 V – 36 W/m (60 W/m <sup>2</sup> ), 10 m	10,000 x 600 x 0.4 mm	2 02 608	1 pc.	£600.00
Heating foil 36 V – 36 W/m (60 W/m <sup>2</sup> ), 11 m double-sided connection	11,000 x 600 x 0.4 mm	2 02 609	1 pc.	£660.00

## 66 W/lfm (110 W/m<sup>2</sup>)



Article	Dimension (LxWxH)	Item-no.	PU	Price/Item
Heating foil 36 V – 66 W/m (110 W/m <sup>2</sup> ), 1 m	1,000 x 600 x 0.4 mm	2 02 627	1 pc.	£67.50
Heating foil 36 V – 66 W/m (110 W/m <sup>2</sup> ), 1.5 m	1,500 x 600 x 0.4 mm	2 02 628	1 pc.	£101.25
Heating foil 36 V – 66 W/m (110 W/m <sup>2</sup> ), 2 m	2,000 x 600 x 0.4 mm	2 02 620	1 pc.	£135.00
Heating foil 36 V – 66 W/m (110 W/m <sup>2</sup> ), 2.5 m	2,500 x 600 x 0.4 mm	2 02 624	1 pc.	£168.75
Heating foil 36 V – 66 W/m (110 W/m <sup>2</sup> ), 3 m	3,000 x 600 x 0.4 mm	2 02 621	1 pc.	£202.50
Heating foil 36 V – 66 W/m (110 W/m <sup>2</sup> ), 3.5 m	3,500 x 600 x 0.4 mm	2 02 625	1 pc.	£236.25
Heating foil 36 V – 66 W/m (110 W/m <sup>2</sup> ), 4 m	4,000 x 600 x 0.4 mm	2 02 622	1 pc.	£270.00
Heating foil 36 V – 66 W/m (110 W/m <sup>2</sup> ), 5 m	5,000 x 600 x 0.4 mm	2 02 626	1 pc.	£337.50
Heating foil 36 V – 66 W/m (110 W/m <sup>2</sup> ), 6 m double-sided connection	6,000 x 600 x 0.4 mm	2 02 623	1 pc.	£405.00

## 132 W/lfm (220 W/m<sup>2</sup>)



Article	Dimension (LxWxH)	Item-no.	PU	Price/Item
Heating foil 36 V – 132 W/m (220 W/m <sup>2</sup> ), 1 m	1,000 x 600 x 0.4 mm	2 02 642	1 pc.	£75.00
Heating foil 36 V – 132 W/m (220 W/m <sup>2</sup> ), 1.5 m	1,500 x 600 x 0.4 mm	2 02 640	1 pc.	£112.50
Heating foil 36 V – 132 W/m (220 W/m <sup>2</sup> ), 2 m	2,000 x 600 x 0.4 mm	2 02 643	1 pc.	£150.00
Heating foil 36 V – 132 W/m (220 W/m <sup>2</sup> ), 2.5 m	2,500 x 600 x 0.4 mm	2 02 644	1 pc.	£187.50
Heating foil 36 V – 132 W/m (220 W/m <sup>2</sup> ), 3 m double-sided connection	3,000 x 600 x 0.4 mm	2 02 641	1 pc.	£225.00

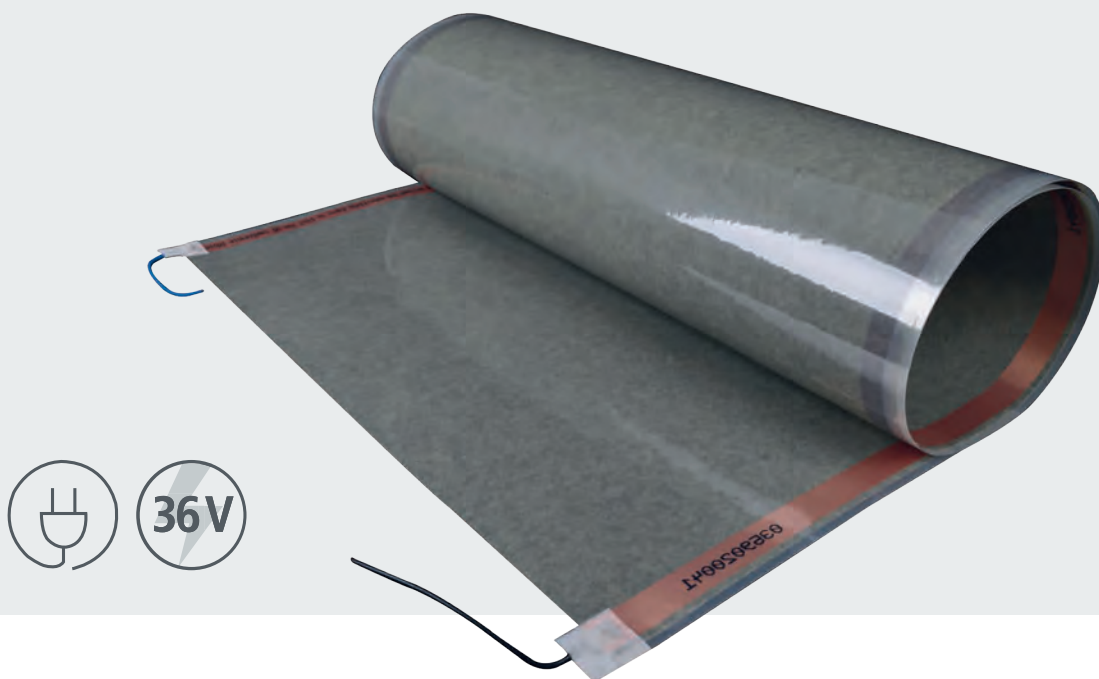
## Heating foils FLEECE S

### 25 W/lfm (145 W/m<sup>2</sup>)



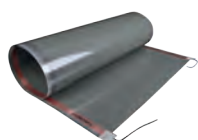
Article	Dimension (LxWxH)	Item-no.	PU	Price/Item
Heating foil 36 V – 25 W/m (145 W/m <sup>2</sup> ), 1 m	1,000 x 170 x 0.4 mm	2 02 663	1 pc.	£37.50
Heating foil 36 V – 25 W/m (145 W/m <sup>2</sup> ), 1.5 m	1,500 x 170 x 0.4 mm	2 02 664	1 pc.	£56.25
Heating foil 36 V – 25 W/m (145 W/m <sup>2</sup> ), 2 m	2,000 x 170 x 0.4 mm	2 02 660	1 pc.	£75.00
Heating foil 36 V – 25 W/m (145 W/m <sup>2</sup> ), 2.5 m	2,500 x 170 x 0.4 mm	2 02 661	1 pc.	£93.75
Heating foil 36 V – 25 W/m (145 W/m <sup>2</sup> ), 3 m	3,000 x 170 x 0.4 mm	2 02 665	1 pc.	£112.50
Heating foil 36 V – 25 W/m (145 W/m <sup>2</sup> ), 3.5 m	3,500 x 170 x 0.4 mm	2 02 666	1 pc.	£131.25
Heating foil 36 V – 25 W/m (145 W/m <sup>2</sup> ), 4 m double-sided connection	4,000 x 170 x 0.4 mm	2 02 662	1 pc.	£150.00





## E-ERGY CARBON PET

### Heating foils



Article	Dimension (LxWxH)	Item-no.	PU	Price/Item
Heating foil 36 V – 69 W/m (115 W/m <sup>2</sup> ), 1.9 m	1,900 x 600 x 0.4 mm	2 02 680	1 pc.	£128.25
Heating foil 36 V – 69 W/m (115 W/m <sup>2</sup> ), 2.9 m	2,900 x 600 x 0.4 mm	2 02 681	1 pc.	£195.75
Heating foil 36 V – 69 W/m (115 W/m <sup>2</sup> ), 3.9 m	3,900 x 600 x 0.4 mm	2 02 682	1 pc.	£263.25
Heating foil 36 V – 69 W/m (115 W/m <sup>2</sup> ), 5.8 m double-sided connection	5,800 x 600 x 0.4 mm	2 02 683	1 pc.	£391.50
Insulating tape black for heating foil PET	20.000 x 50 x 0.19 mm	2 02 933	1 pc.	£14.45



# Power supplies

E-ENERGY CARBON works with protective low voltage (36V). The control takes place via the room thermostat with modern SmartHome technology. Thanks to the E-ENERGY CARBON transformer with safety extra-low voltage (SELV), the Connection is completely secure.

1

Toroidal core transformer ensures high efficiency

2

Integrated inrush current limiter

3

Safety extra-low voltage 36 V



## BASIC



Ready in housing



Suitable for AP/UP mounting



Optimal use of power

36 V



300 – 1,200 W

SELV

## HT



Plug-in models



Protected version for  
moisture protection



Master-Slave option possible

36 V



400 – 2,000 W

SELV





# Power supplies BASIC

## Power supply units TT

Toroidal transformer with integrated inrush current limiter, secondary-side protection of the heating circuits and high efficiency of up to 97%. In surface-mounted housing suitable for surface and flush mounting. Optimum utilisation of the transformer output through intelligent division of the heating circuits with flexible connection options. Supply contact (230 V) for connecting a room thermostat and a control input (230 V – normally open contact) for switching the transformer.



Article	Dimension (LxWxH)	Item-no.	PU	Price/Item
Power supply Basic TT 400 W AP/UP*	250 x 173 x 75 mm	2 03 571	1 pc.	£295.00
Power supply Basic TT 800 W AP/UP*	300 x 220 x 85 mm	2 03 572	1 pc.	£450.00
Power supply Basic TT 1,200 W AP/UP*	300 x 220 x 85 mm	2 03 573	1 pc.	£525.00

## Power supply unit EI

Ready-to-plug EI transformer for heating outputs of up to 300 watts, ideal for comfort temperature control of small areas, e.g. in bathrooms



Article	Dimension (LxWxH)	Item-no.	PU	Price/Item
Power supply Basic EI 300 W AP/UP*	134/101 x 91 x 100 mm	2 03 576	1 pc.	£120.00

\*Power supplies BASIC available from 2nd quarter 2020

## Control system



Article	Dimension (LxWxH)	Item-no.	PU	Price/Item
<b>Room thermostat touch*</b> (incl. external temperature sensor, supply 230 V)	85 x 85 x 40 mm	2 03 250	1 pc.	£199.00
<b>Room thermostat WIFI*</b> (incl. external temperature sensor, supply 230 V)	85 x 85 x 40 mm	2 03 251	1 pc.	£219.00

\*in connection with the power supplies HT a relay with potential-free contact is necessary to switch the transformer, possible products are e.g. Eltako R12-100-230V or Eltako ER61-UC.

## Accessories



Article	Dimension (LxWxH)	Item-no.	PU	Price/Item
Sensor connection set		2 00 554	1 pc.	£26.20



# Power supplies HT

## Power supplies HT

Toroidal transformer with integrated inrush current limiter, secondary-side protection of the heating circuits and high efficiency of up to 97%. Supply contact (12 V) for connecting the room thermostat HT UP as well as a control input (potential-free normally open contact required). Integrated radio module for alter-native connection of the room thermostat HT Surface-mounted Radio. A contact for connecting the external temperature sensor HT, a master/slave contact for cascading several transformers and the integrated switch-on delay increase the range of functions of the HT series. For moisture protection, the devices in the protect version can be operated without an additional room thermostat by connecting the external HT temperature sensor.



Article	Dimension (LxWxH)	Item-no.	PU	Price/Item
Power supply UP 400 W compact	182 x 212 x 52 mm	2 03 530	1 pc.	£345.00

36 V power supply unit for installation in flush-mounted cabinet or surface-mounted housing



Power supply HT 400 W UP	195 x 265 x 75 mm	2 03 510	1 pc.	£395.00
Power supply HT 800 W UP	246 x 265 x 76 mm	2 03 511	1 pc.	£510.00
Power supply HT 1,200 W UP	246 x 265 x 86 mm	2 03 512	1 pc.	£620.00
Power supply HT 1,600 W UP	246 x 265 x 87 mm	2 03 513	1 pc.	£740.00
Power supply HT 2,000 W SC	246 x 265 x 87 mm	2 03 531	1 pc.	£845.00

6 V power supply unit in surface-mounted housing, ready to plug in



Power supply HT 1,200 W AP	290 x 220 x 110 mm	2 03 521	1 pc.	£855.00
Power supply HT 2,000 W AP	320 x 250 x 120 mm	2 03 522	1 pc.	£995.00



## Power supply units for moisture protection

Power supply units for use on damp surfaces to prevent mold growth



Article	Dimension (LxWxH)	Item-no.	PU	Price/Item
Power supply HT 100 W AP incl. temperature sensor	186 x 123 x 41 mm	2 03 520	1 pc.	£260.00
Power supply HT 400 W UP protect (external temperature sensor HT necessary, accessory article)	182 x 212 x 52 mm	2 03 532	1 pc.	£420.00
Power supply HT 400 W UP protect compact (external temperature sensor HT necessary, accessory article)	195 x 265 x 75 mm	2 03 533	1 pc.	£370.00

## Built-in cupboards HT



Article	Dimension (LxWxH)	Item-no.	PU	Price/Item
Installation box HT UP compact	238 x 208 x 68 mm	2 03 540	1 pc.	£45.00
Installation box HT UP	305 x 315 x 85 mm	2 03 541	1 pc.	£185.00
Cavity wall mounting kit for flush-mount box HT UP		2 03 542	1 pc.	£46.50
Housing HT AP 1-fould with plastic cover	265 x 220 x 85 mm	2 03 550	1 pc.	£129.00
Housing HT AP 3-fould with plastic cover		2 03 551	1 pc.	£515.00

## Cables & Connectors (36 V Connection)

PUR supply cable for connecting the heating foils to the transformer. 2.5 m<sup>2</sup> to max. 10 m cable length per transformer output (400W). 6.0 m<sup>2</sup> to max. 25 m cable length per transformer output (400W).



Article	Dimension (LxWxH)	Item-no.	PU	Price/Item
PUR twin cable	2 x 2.5 mm <sup>2</sup>	2 00 600	25 m	£3.15 / m
PUR twin cable	2 x 2.5 mm <sup>2</sup>	2 00 601	50 m	£3.15 / m
PUR twin cable	2 x 6.0 mm <sup>2</sup>	2 00 602	25 m	£5.75 / m
PUR twin cable	2 x 6.0 mm <sup>2</sup>	2 00 603	50 m	£5.75 / m
Crimp connector	2.5 mm <sup>2</sup>	2 00 650	20 pcs.	£20.50 / pouch
Crimp connector	6.0 mm <sup>2</sup>	2 00 651	20 pcs.	£27.50 / pouch

## Control system



Article	Dimension (LxWxH)	Item-no.	PU	Price/Item
<b>Room thermostat touch*</b> (incl. external temperature sensor, supply 230 V)	85 x 85 x 40 mm	2 03 250	1 pc.	£199.00
<b>Room thermostat WIFI*</b> (incl. external temperature sensor, supply 230 V)	85 x 85 x 40 mm	2 03 251	1 pc.	£219.00

\* in connection with the power supplies HT a relay with potential-free contact is necessary to switch the transformer, possible products are e.g. Eltako R12-100-230V or Eltako ER61-UC.



<b>Room thermostat wired HT UP**</b> (excl. external temperature sensor   Connection of external temperature sensor possible, accessories, supply 12 V)	85 x 85 x 40 mm	2 03 260	1 pc.	£100.00
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<b>Room thermostat radio HT AP**</b> (external temperature sensor can only be connected to transformer, accessories, battery operated)	85 x 85 x 40 mm	2 03 441	1 pc.	£100.00
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\*\* Room thermostats with factory-made potential-free contact, can only be used with power supplies of the HT series.

## Accessories



Article	Dimension (LxWxH)	Item-no.	PU	Price/Item
Antenna for room thermostat HT radio AP + UP-/SC power supply unit		2 03 560	1 pc.	£17.50



Antenna for room thermostat HT radio AP + AP power supply unit		2 03 561	1 pc.	£22.50
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DC line filter to reduce line-related transformer noise



DC line filter HT		2 03 562	1 pc.	£50.00
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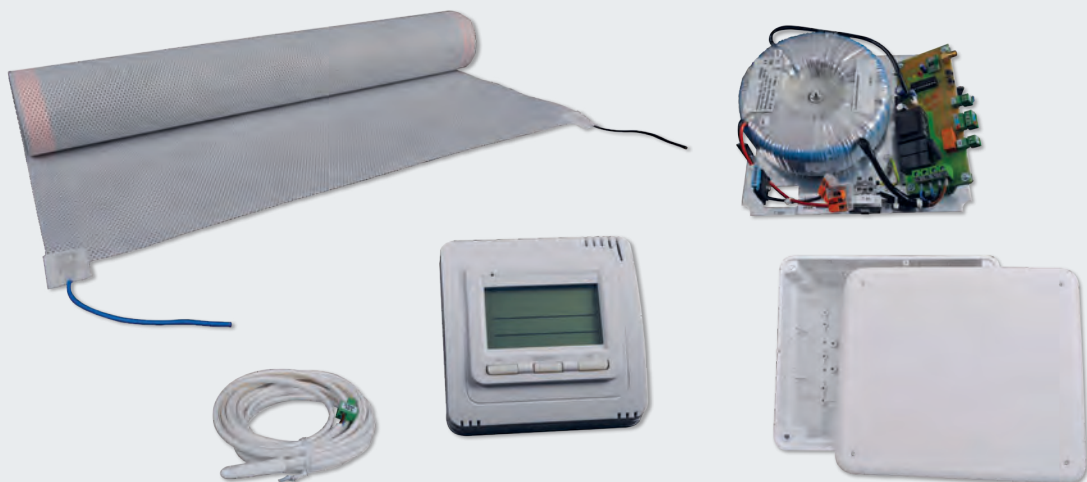


External temperature sensor	3.000 mm	2 03 563	1 pc.	£30.00
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Sensor connection set		2 00 554	1 pc.	£26.20
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## BATHROOM SETS



**Bathroom set 01 | 3-4 m<sup>2</sup> | Item-no. 2 97 010**

**£880.00**

**Contents:** 1x heating foil 36 V – 66 W/lfm (110 W/m<sup>2</sup>), 6 m, 1x power supply HT 400 W UP compact, 1x installation box HT UP compact, 1x external temperature sensor, 1x room thermostat UP (programmable)



**Bathroom set 02 | 7-8 m<sup>2</sup> | Item-no. 2 97 011**

**£1,555.00**

**Contents:** 2x heating foil 36 V – 66 W/lfm (110 W/m<sup>2</sup>), 6 m, 1x power supply HT 800 W UP, 1x installation box HT UP, 1x external temperature sensor, 1x room thermostat wired UP (programmable)

# MOISTURE PROTECTION SETS



**Moisture protection set 01**  
Item-no. 2 97 001

£390.00

**Contents:** 1x power supply HT 100W AP, 1x heating foil 36 V – 36 W/lfm (60 W/m<sup>2</sup>), 2.5 m



**Moisture protection set 02** Item-no. 2 97 003

£1,090.00

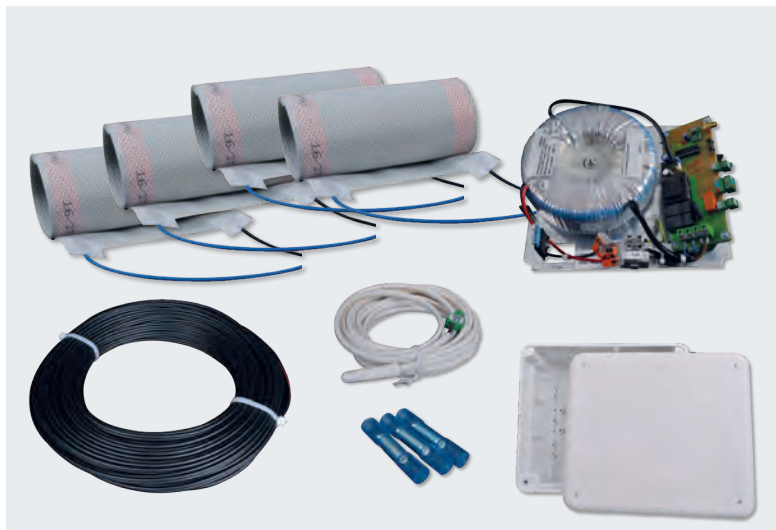
**Contents:** 1 x power supply HT 400 W UP compact, 1x external temperature sensor, 1x installation box HT UP compact, 4x heating foil 36 V – 36 W/lfm (60 W/m<sup>2</sup>), 2.5m, 1x PUR cable strand 25 m, black, 1x PUR cable lead 25 m, blue, 1x crimp connector 2.5 mm<sup>2</sup> (20 pcs.)



**Moisture protection set 03**  
Item-no. 2 97 002

£390.00

**Contents:** 1x power supply HT 100 W AP, 2x Heating E-ENERGY CARBON FLEECE S 36 V – 25 W/lfm (145 W/m<sup>2</sup>) 2 m



**Moisture protection set 04** Item-no. 2 97 004

£875.00

**Contents:** 1x power supply HT 400 W UP compact, 1x external temperature sensor, 1x installation box HT UP compact, 4x Heating E-ENERGY CARBON FLEECE S 36 V – 25 W/lfm (145 W/m<sup>2</sup>) 2.5m, 1x PUR twin cable 25 m, 1x crimp connector 2.5 mm<sup>2</sup> (20 pcs.)



## Combinations transformer – cabinet

	Installation box UP compact	Installation box UP	Housing AP 1-fould with plastic cover	Housing AP 3-fould with plastic cover
Power supply UP 400 W / Power supply UP 400 W protect	—	●	●	●
Power supply UP 800 W	—	●	●	●
Power supply UP 1200 W	—	●	—	●
Power supply UP 1600 W	—	●	—	●
Power supply UP 400 W compact / Power supply UP 400 W protect compact	●	—	—	—
Power supply SC 2,000 W	—	—	—	●

## Application possibilities

	E-ENERGY CARBON FLEECE 36 W/lfm (60 W/m²)	E-ENERGY CARBON FLEECE 66 W/lfm (110 W/m²)	E-ENERGY CARBON FLEECE 132 W/lfm (220 W/m²)	E-ENERGY CARBON PET 69 W/lfm (115 W/m²)
Ceiling	(●)	●	●	—
Wall	●	●	(●)	—
Floor	●	● Only tiles	—	● Floating installation



# General Terms and Conditions

## 1. General information/scope of application

1.1 These General Terms and Conditions (GTC) apply exclusively and for all Contractors (Section 14 BGB (German Civil Code)), legal entities under public law or special funds under public law. We only accept opposing conditions or conditions of the Customer deviating from our general terms and conditions unless we have expressly agreed to their application in writing.

1.2 Our offers, services and deliveries are based exclusively upon these GTC.

1.3 With the receipt of an offer, an order confirmation or the granting of order or acceptance of a service with the incorporation of these general terms and conditions at the latest, the Contractor acknowledges that these GTC are to apply exclusively for the entire business relationship – also in the future.

1.4 Contractual stipulations agreed upon between the contractual parties in individual cases [also subsidiary agreements, amendments and changes] apply only in relation to an order and have to be documented in writing to be applicable, thereby taking priority over these GTC in any case.

1.5 Orders or assignments are binding for the Customer (I, II); the agreement is formed by confirmation of the assignment or execution of the order or the assignment at our discretion. We explicitly reject deviating general terms and conditions or counter confirmations. An opposing assignment prohibition is hereby explicitly refused. Our silence regarding such deviating conditions is particularly not regarded as recognition or approval, also in case of future transactions. Our offers are subject to change and non-binding unless we have explicitly declared them or indicated to be binding in writing.

1.6 The terms listed below are defined as follows:

"We / Contractor / Supplier": mfh systems GmbH, Hager Feld 8, 49191 Belm. "Force majeure": constitutes any reason which renders the fulfillment of the respective contractual obligations impossible and which is generated due to circumstances outside of the reasonable control of the respective Party, including but not limited to natural disasters, acts by governments or supra-national institutions, outbreaks of violence, national states of emergency, terror attacks, riots, internal unrests, fires, explosions or floods. "Order": constitutes any offer to the supplier for the sale of goods with reference to the conditions of this Agreement. "Principal / Customer": constitutes the Purchaser of the goods specified on the order form. "Goods": are the commodities dispatched by us. "Product description": is a detailed illustration of the goods with correct usage instructions.

## 2. Offer and conclusion of the contract

2.1 We are bound to an offer of the Customer for 14 days. Subsequent acceptances by the Principal represent a new offer and require the Contractor's acceptance. If the Principal's order deviates from the Contractor's quote, a contract is only formed in this case with the confirmation of the Contractor.

2.2 We reserve proprietary rights and copyrights to all documents e.g. calculations, drawings etc. provided to the Customer in the context of the assignment. The Purchaser may only transfer these to third parties with our written consent, regardless whether or not we have labelled them as confidential. If the Customer acts contrary to this regulation, we reserve the right to take further steps. These documents may not be made accessible to third parties unless we explicitly agree or if it is necessary for the implementation of the Agreement. Unless we accept the offer of the contractual partner within the period specified in item 2.1, these documents have to be returned to us without undue delay.

2.3 The Principal has to hand over the data or plans necessary for the execution of the service and which have to be provided by him in accordance with the Agreement free of charge and in due time, i.e. at least four (4) weeks prior to the commencement of production.

2.4 If this deadline is not met and if this omission causes delays, the Principal is responsible for any resulting additional costs and/or damages.

## 3. Quality of goods

3.1 Construction and form changes of the delivery item remain reserved if the delivery item is not significantly altered and if the changes are reasonable for the Purchaser or in the nature of things.

3.2 Templates, samples, analysis data and other specifications regarding the quality on our part are only indications within the actually available range of the respective values pertaining to dimensions, colour, quality, chemical composition and action mechanism of the products supplied by us. The Agreement is deemed fulfilled also in case of a respective excess or short delivery.

3.3 We only assume the guarantee for quality, durability or the earnings of the delivery item or the procurement risk upon explicit, written, order-related statement, however, not based on the content of product descriptions, technical data and other printed material and information.

## 4. Prices and payment conditions

4.1 Subject to a deviating agreement, prices apply ex our warehouse or ex works in case of direct dispatch from the manufacturers location, exclusive of packaging; (ex-works" (Incoterms 2010).

4.2 Specified and agreed prices are net plus VAT in the statutory amount applicable at the time of execution of the service. Payment is due immediately upon receipt or provision and receipt of the invoice without any deduction free paying agent, unless the invoice specifies a different payment term. A discount is only admissible following a special written agreement between us and the Purchaser. Payment is only received once we are ultimately able to dispose over the full amount. We do not accept bills of exchange or cheques as payment.

4.3 If the Purchaser is in default of payment, the entire claims against the Purchaser become due and payable immediately if he is in default with more than one account. Payments may only be made to employees of our company if they produce a written authorisation to collect.

4.4 If, based on facts which become known to us only after conclusion of the Agreement, there are justified doubts about the creditworthiness of the Purchaser or if the creditworthiness has deteriorated significantly between the conclusion of the Agreement and delivery, we may demand advance payment or corresponding securities. If the Purchaser

does not pay in advance or provide securities despite a grace period and if the threat to refuse to pay after the deadline has expired, or if he finally refuses to pay, we can withdraw from the contract by written declaration.

4.5 The Purchaser is not permitted to offset our claims unless the claim for offsetting is uncontested, conclusively determined and accepted by us. The Purchaser is only entitled to a right of retention if his counter claim is based on the same contractual relationship.

## 5. Delivery and performance time, default / self-supply and force majeure

5.1 Delivery times and deadlines are determined by us in writing and are binding only at that point. The delivery deadline is met if the delivery item has been dispatched up to its expiration.

5.2 The delivery term commences on the day of undersigning a written purchase agreement or the dispatch of the order confirmation, however not before the delivery of the documents, permits or approvals to be provided by the Purchaser as well as the receipt of a possible/agreed deposit.

5.3 Partial deliveries are admissible if the contractual parties does not incur any significant additional expenses or additional costs; if the residual delivery is ensured and if the partial delivery is usable by the Customer in the context of the contractually determined purpose.

5.4 We shall inform the Customer in writing or text form immediately if we do not receive deliveries/performance from our pre-suppliers, not correctly or not in time for reasons outside of our sphere of responsibility for the provision of contractually owed deliveries/performance despite proper and sufficient respective provision [congruent provision] or in the event of force majeure for a significant period of time [i.e. with a duration of more than 14 calendar days]. In this case we are entitled to delay the delivery by the duration of the impediment or partially or entirely withdraw from the agreement with respect to the unfulfilled part if we have complied with our above mentioned duty to provide information and if we have not accepted the risk of procurement.

5.5 If a delivery/performance date or delivery/performance deadline has been bindingly agreed and if it is exceeded based on the above mentioned events, the Customer is entitled to withdraw from the agreement with respect to the unfulfilled part of the agreement following full expiration of an appropriate period of grace if a further compliance with the agreement is objectively unacceptable for the Customer. Further claims of the Customer, particularly those pertaining to compensation, are excluded in this case. The regulation above applies accordingly if a conventional delivery/performance deadline has been exceeded by more than 7 calendar days due to the above mentioned reasons, also without the contractual agreement of a fixed delivery/performance deadline. If the agreement for delivery/performance to be provided by us is dissolved entirely or partially by us or the Customer due to the above mentioned regulations, we shall immediately refund to the Customer – deducting the cost incurred to us at that time – the part of consideration with respect to the dissolved part of the agreement in the event that he has paid a deposit.

## 6. Transfer of risk, dispatch, packaging

6.1 The route and means of dispatch are left to our discretion in the absence of an individual agreement. The goods shall be additionally insured at the request and expense of the Customer.

6.2 The Purchaser is responsible for any additional costs generated due to alterations to the routes and means based on Customer requests after the conclusion of the Agreement or special requests and interests of the Purchaser.

6.3 The risk for the goods is transferred to the Customer upon handover of the goods to the forwarding agent or freight carrier, however at the latest upon leaving the warehouse or, in case of direct dispatch ex-works upon the goods leaving the factory. This also applies in case of partial deliveries. If dispatch is delayed due to circumstances owed to the Purchaser, the risk is transferred to the Purchaser from the day the goods are ready for dispatch; however, we are obligated to store the goods at the request and expense of the Customer.

6.4 Detected transport damages have to be reported to us and the forwarder immediately and the goods have to be returned to us with an acknowledgement statement from the forwarding agent, post, rail or other parcel service as well as an assignment declaration of the Customer. Subsequently, we are able to dispatch a replacement delivery if the prerequisites of a claim of the transport company exists and if the Customer has submitted all necessary documents and information.

6.5 Delivered objects have to be accepted by the Purchaser also if they exhibit insignificant defects, regardless of his rights based on the law and the agreement.

6.6 Transport and all other packaging according to the specifications of the respectively valid Packaging Ordinance are non-returnable. The Purchaser is obligated to ensure the disposal of the packaging at his expense.

## 7. Warranty and notice of defect

7.1 We are entitled to subsequent fulfillment in form of a remedy or – in case of purchase agreements, to supply a new defect-free item at our discretion. We have the right to carry out supplementary fulfillment twice. Subsequently, the Customer can demand withdrawal or reduction according to the statutory regulations.

7.2 The Principal is obligated to inspect the delivery immediately. The supplier has to be informed in writing of the determination of defects within a preclusion period of one week, specifying the detailed reclamation. The preclusion period commences with the handover in case of obvious defects and upon discovery in case of hidden defects. Any warranty claims of the Customer are excluded upon the expiration of this period without a complaint of defects.

7.3 In case of purchase agreements, the statute of limitations for warranty claims based on purchasing or service supply agreements is one year from delivery of the goods, in case of service agreements one year from acceptance.

7.4 Warranty is excluded for the sale of used items.

7.5 This does not apply for claims based on warranty, the takeover of a procurement risk in terms of Section 276 BGB (German Civil Code), claims based on the

violation of life, limb or health, malicious, intentional or gross negligent acts on our part. It also applies in cases of Sections 478, 479 BGB (recourse within the supply chain), Section 428 (1) no. 2 or in as far as a longer mandatory limitation period is determined. Section 305b BGB (priority of the individual verbal or textual or written understanding) remains unaffected. A reversal of the onus of proof is not associated with the above regulation.

7.6 Our warranty and the resulting liability is excluded if defects and related damages are not verifiably and culpably based on faulty material, faulty construction or execution or faulty manufacturing materials or, if owed, on insufficient usage instructions.

7.7 The warranty and resulting liability based on breach of duty due to poor performance is particularly excluded for the consequences of incorrect usage, unsuitable storage conditions and the consequences of chemical, electromagnetic, mechanical or electrolytic impacts, which do not comply with our product descriptions or an alternately agreed product specification or the respective product-specific data sheet on our part or the manufacturer's average standard impacts. This does not apply in case of malicious, gross negligent or intentional acts on our part or the violation of life, body or health, the assumption of a warranty, the quality risk according to Section 276 BGB (German Civil Code) or liability according to statutorily mandatory liability.

7.8 We are not liable according to Sections 478, 479 BGB (recourse in the supply chain – supplier regress), if the Customer has processed or incorporated or otherwise altered the products supplied by us according to the agreement, unless this complies with the contractually agreed purpose of the products.

7.9 The acknowledgement of breaches of duty in form of material defects owed to us always requires the written form. Section 305b BGB (priority of individual agreement) remains unaffected.

7.10 If the liability for damages is not based on the violation of life, limb or health of the Purchaser and negligence is not excluded, such claims become statute barred within one year, commencing with the generation of the claim.

7.11 The above mentioned exclusion of liability also applies for gross negligent or intentional breaches of duty of our vicarious agents. If our liability for compensation is excluded or limited, this also applies in terms of the personal liability for compensation with respect to our employees, representatives and vicarious agents.

## 8. Reservation of title

8.1 We reserve ownership to the goods and objects delivered or – not permanently – installed by us up to the full payment of outstanding claims. The reservation of title also applies until all, including future and conditional claims from the business relationship between the Principal and us are fulfilled.

8.2 The Principal is entitled to process the supplied goods in the context of his regular business operation. The goods are processed for the Contractor without obligations for him, the new items become the property of the Contractor.

8.3 If the goods are processed with other goods not belonging to the Contractor, the Contractor obtains co-ownership of the newly produced item at the ratio of the invoice value of the reserved goods to the other processed items. If the property of the Contractor should nonetheless perish and the Principal should become (co-)owner, the Principal hereby transfers his ownership to the Contractor as security according to the ratio of the invoice value of the reserved goods to the other processed objects. In all cases mentioned above, the Principal has to store the items owned or co-owned by the Contractor free of charge for the Contractor.

8.4 The Principal's authority to on-sell expires automatically with a futile attempt of an enforcement of judgement of debt as well as the lodgement of an application to initiate insolvency proceedings pertaining to the Principal's assets. For the remainder, other injunctions pertaining to the reserved goods, particularly pledging and chattel mortgages without consent are inadmissible and lead to a prohibition to on-sell.

8.5 The Principal hereby assigns all claims with all ancillary rights generated from the on-selling of the reserved processed and unprocessed goods to the Contractor, who accepts this assignment.

8.6 In the event of a sale of processed, connected, mixed or intermingled reserved goods, the supplier procures the top-ranking partial amount equating to the percentage share of the invoice value of his supplied goods plus a security surcharge of 5%.

8.7 The Principal is entitled, subject to revocation at any time, to collect the claims assigned to the Contractor in the regular business operation. The Contractor shall not utilise his own authority to collect as long as the Purchaser complies with his payment obligations according to the Agreement – also toward third parties. If the Principal assigns his subsequent claim to a factoring institute in the context of so-called non-recourse factoring subject to assuming the delcredere risk, the Principal assigns his claims against the factoring institute for the payment of the factoring proceeds to the Contractor and is obligated to notify the factoring institute of this assignment immediately upon invoicing by the Contractor.

8.8 Upon demand, the Purchaser is obligated to provide the Contractor with a detailed list of the claims owed to the Contractor incl. name and address of the buyers, amount of individual claims, invoices etc. and all information necessary for the assertion of the assigned claims and allow the Contractor to verify this information. The Purchaser is obligated to handle the goods carefully.

8.9 The Purchaser is obligated to immediately inform us immediately in case of pledges or other third-party interventions. The Principal is only permitted any subsequent processing, installation, connection or redesigning (Sections 946, 947, 950 BGB) of the goods still owned by the Contractor with the prior written consent of the supplier.

## 9. Change to General Terms and Conditions

9.1 The Contractor is entitled to unilaterally change these General Terms and Conditions – in as far as they are incorporated in the contractual relationship with the contractor [Principal?] – as far as necessary for the elimination of subsequently arising equivalence disturbances or to adapt to changed legal or technical framework conditions. The contractor is informed of these amended regulations together

with their relevant content.

9.2 The change becomes a component of the Agreement if the Principal does not object to the inclusion in the contractual relationship in writing within six (6) weeks following the receipt of the change notice.

## 10. Place of jurisdiction, applicable law

10.1 If the Purchaser is a merchant, a legal person under public law or a public special fund, the place of jurisdiction for all legal disputes is our registered address. This also applies for claims asserted during summary proceedings for recovery of debt.

10.2 The inclusion and interpretation of these General Terms and Conditions as well as conclusion and interpretation of legal transactions with the Principal are exclusively regulated according to the laws of the Federal Republic of Germany. The application of the uniform laws regarding the conclusion of international contacts pertaining to movable objects, the uniform law regarding the international purchase of movable objects of the of the United Nations Convention on Contracts for the International Sale of Goods are excluded.

## 11. Severability clause

11.1 If a condition of this Agreement is or becomes entirely or partially ineffective/null and void or unenforceable for reasons of the right of General Terms and Conditions according to Sections 305 to 310 BGB, the statutory regulations apply. 11.2 If a current or future regulation of the Agreement is or becomes entirely or partially ineffective/null and void or unenforceable due to reasons other than the regulations concerning the right to General Terms and Conditions according to Sections 305 to 310 BGB, the validity of the remaining conditions of this agreement is not affected in as far as the execution of the agreement – also under consideration of the subsequent regulations – would constitute an unreasonable hardship for one party. This also applies in the event of a gap after the conclusion of the Agreement, which requires completion.

11.3 Contrary to the principle of the adjudication of the German Federal Court of Justice, according to which a safeguarding conservation clause is Principally designed to merely reverse the burden of proof, the effectiveness of the remaining contractual regulations is to remain intact under any circumstances, thus excluding Section 139 BGB (German Civil Code) entirely.

11.4 The parties shall replace an invalid/void/unenforceable condition or gaps which require filling, which are invalid/void/unenforceable for reasons other than the regulations in terms of the right of general business conditions according to Sections 305 to 310 BGB, with an effective condition, the legal and commercial context of which complies with the invalid/void/unenforceable condition and the entire purpose of this Agreement. Section 139 BGB (partial invalidity) is explicitly excluded.

11.5 If the invalidity of a condition is based on a measure of performance or time (period of notice or deadline) specified therein, the condition is deemed agreed upon with a legally admissible measure closest to the original specification.

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